REMARKS/ARGUMENTS

Reexamination and reconsideration of this Application, withdrawal of the rejection, and formal notification of the allowability of all claims as now presented are earnestly solicited in light of the above amendments and remarks that follow.

Claims 1-49 are being examined. Claims 50-63 are withdrawn from consideration. Claims 6, 11, 28, 34, and 39 have been amended herein to correct minor informalities. Applicant respectfully submits that no new matter has been introduced by these amendments.

I. Objections to the Specification and Claims

The specification has been objected to due to typographical errors in the spelling of 1-hydroxycyclohexyl phenyl ketone, bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentyl phosphine oxide and IRGACURE. In response, Applicant has corrected the spelling of 1-hydroxycyclohexyl phenyl ketone on pages 6 and 8 and in Claims 6 and 34. Additionally, Applicant has corrected the typographical error in the spelling of IRGACURE on pages 6 and 8. However, Applicant notes that bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentyl phosphine oxide is spelled correctly in Applicant's specification and submits that the spelling in the Sokol patent is incorrect. Applicant has included herewith a copy of a technical data sheet provided by the manufacturer of IRGACURE 1700. As shown in the enclosed document, the chemical name provided in Applicant's specification is correct. In light of the foregoing, Applicant respectfully requests reconsideration and withdrawal of all objections to the specification.

Claims 6 and 34 are objected to due to the informalities discussed above in connection with the two chemical names. Claims 6 and 34 have been amended to correct the spelling of 1-hydroxycyclohexyl phenyl ketone. The IRGACURE 1700 chemical is spelled correctly in the specification and claims. In light of the foregoing, Applicant respectfully requests reconsideration and withdrawal of all claim objections.

II. Section 112 Rejections

Claims 11-12, 14-28, 39-40, 42, and 48-49 stand rejected under 35 U.S.C. §112, first and second paragraphs, as being both indefinite and non-enabled. In the case of Claims 11, 28, and

39, the Examiner objects to the intensity units "W/cm." With respect to Claims 12 and 40, the Examiner objects to characterization of the rate of exposure in terms of feet of substrate per minute. With respect to Claims 14, 42 and 48-49, the Examiner has objected to the characterization of peel strength in the units "oz./inch." Applicant respectfully traverses these rejections.

With regard to the rejection of Claims 11, 28, and 39, the intensity unit designation "W/cm" has been amended to read "W/cm^2" in the specification and in the claims in order to insert the inadvertently omitted squared notation. Applicant respectfully submits this amendment is merely correction of an obvious typographical error in the radiation intensity units provided in Applicant's specification. Applicant notes that watts per unit area, and specifically W/cm^2, is one of the most common radiation intensity units used in the industry. Thus, it would be readily apparent to one of ordinary skill in the art that Applicant intended to refer to a cm^2 area.

With respect to Claims 14, 42, and 48-49, Applicant respectfully submits that the units "oz./inch" are commonly used in the industry to express peel strength. As one of ordinary skill in the art would immediately understand, a common peel strength testing method involves measuring of the peel force required to peel a coating from a one-inch wide piece of substrate, hence the use of oz/inch units. Applicant notes that the Examiner specifically mentions this common testing procedure in the Office Action, but takes issue with the Examiner's allegation that this "clarifying limitation is not supported by the specification". The specification is not required to teach that which one of ordinary skill in the art would already know. In this case, the mere use of oz/inch units is sufficient to inform one of ordinary skill in the art of the type of testing involved.

Regarding Claims 12 and 40, Applicant is puzzled by the rejection. There is nothing indefinite or non-enabled about the subject matter of these claims. Claims 12 and 40 merely recite that the exposing step comprises exposing the coated substrate to the radiation source such that about 1 to about 10 feet of substrate are exposed to radiation each minute. One of ordinary skill in the art would not be confused by this recitation. The Examiner alleges that this is indefinite because the exposure time for curing for each point of the coating is not specified.

However, Applicant submits that there is no basis for requiring such a limitation in these particular claims. The claims, on their face, clearly and unambiguously recite a limitation of the exposing method step that involves a stated feet/minute rate of exposure, which reflects the practical reality of exposing large substrates, such as airplane fuselage panels, to a radiation source. Typically, such an exposure step will involve relative movement of the substrate past the radiation source, either by movement of the source or movement of the substrate, at a certain rate. These claims merely specify a particular rate of movement in a manner that would be clearly understood by one of ordinary skill in the art.

In light of the foregoing, Applicant respectfully requests reconsideration and withdrawal of all Section 112 rejections.

III. Section 102 Rejection

Claims 1-4, 7-8, 13-15, and 17-18 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,466,739 to Maeda *et al.* The Examiner alleges that the Maeda reference teaches peelable radiation curable maskant compositions optionally including a polymerizable acrylate with talc or silica filler and a process of chemically milling a metal aircraft part using a maskant. The Examiner alleges that, since the Maeda reference mentions drying the coating by far infrared rays, the reference "suggest the use of a photoinitiator and is considered to be actinic by causing or accelerating polymerization to form a cured maskant film." Applicant respectfully traverses this rejection.

The present invention provides an improved maskant and line sealer for protecting metal substrates, such as aircraft fuselage panels, that does not require the presence of water or other solvents that can lead to increased toxicity and undesirably long drying times (see Applicant's Background of the Invention section, pages 1-2). To overcome the problems associated with prior art maskant compositions, Applicant has developed a substantially solvent-free and actinic radiation curable masking composition. The compositions of the invention exhibit greatly reduced curing times and reduce the need for reapplication of the maskant. Additionally, the compositions of the invention pose fewer toxicity or environmental concerns because use of toxic organic solvents is avoided. As noted in Claim 1, the method of the invention comprises

applying a maskant coating that is radiation curable and substantially solvent-free. As recited in dependent Claim 3, the maskant composition may comprise at least one polymerizable monomer or oligomer and a photoinitiator.

The Maeda reference is only directed to water-based maskant compositions and merely describes a prior art maskant composition that requires extensive drying to remove the water present in the composition. The composition described in the Maeda suffers from some of the same disadvantages discussed in Applicant's background; namely, inconsistent and potentially long drying times, particularly in high humidity environments. There is nothing in the Maeda reference to remotely suggest the use of a substantially solvent-free maskant coating composition as presently claimed by Applicant. Instead, the Maeda reference describes compositions containing as much as 100-300 parts by weight of water (column 4, lines 41-47). Thus, the Maeda reference actually teaches away from Applicant's invention by suggesting the use of a water-based maskant composition.

In addition, Applicant disagrees with the Examiner's suggestion that merely mentioning that the coating described in Maeda may be dried by "far infrared rays" suggest the use of a photoinitiator. Prior art references must be considered in their entirety and single sentences cannot be taken out of context in order to read additional teachings into the reference that are not fairly attributable to the reference. In the present case, it is very clear that the Maeda reference does not contemplate the use of actinic radiation curable compositions that utilize a photoinitiator that reacts with the polymerizable monomer or oligomer upon exposure to radiation. While the Maeda reference mentions conventional emulsion polymerization initiators, there is nothing in the reference to suggest the use of a radiation curable system and absolutely no mention of photoinitiators of any kind. The single sentence referred to by the Examiner only mentions the use of infrared rays for drying the coating film. No other use for infrared radiation is suggested or implied in the Maeda reference. In particular, there is certainly no suggestion to utilize radiation in a polymerization reaction.

Further, the Maeda reference teaches a fundamentally different method of preparing the maskant composition. The Maeda reference teaches forming a water-based maskant composition by adding 100 parts by weight of a solid latex component comprising a copolymer latex obtained

by emulsion polymerization and a natural rubber latex to 100-300 parts of water. After such a water-based composition is formed, the mixture is then coated onto a metal substrate and dried. In stark contrast, Claim 1 of Applicant's invention recites the steps of applying a radiation curable composition and then exposing the coated substrate to actinic radiation to cure the maskant. Unlike the Maeda method, the curing or polymerization step in the present method occurs after application of the coating to the substrate. The Maeda reference contemplates polymerizing the latex portion of the composition prior to applying the coating to the substrate.

In light of the foregoing, Applicant respectfully submits that the Maeda reference fails to teach or suggest the subject matter of independent Claim 1 or any of its dependent claims when considered singly or in combination with any other reference of record. Thus, Applicant respectfully requests reconsideration and withdrawal of this rejection.

IV. Section 103 Rejections

The Office Action includes five rejections under 35 U.S.C. §103(a) involving a combination of the Maeda reference with one or more additional references. Specifically, Claims 5-6 and 9-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the Maeda reference in view of U.S. Patent No. 5,773,487 to Sokol. Claims 16, 19-21, 26, 29-32, 35, 41-42 and 43-46 stand rejected as being unpatentable over the Maeda reference in view of either U.S. Patent No. 5,126,005 to Blake or U.S. Patent No. 4,585,519 to Jaffe *et al.* Claims 22-23, 27, 33-34, 37-38, and 48-49 stand rejected as being unpatentable over the Maeda reference in view of either the Blake or Jaffe references and further in view of the Sokol reference. Claims 24-25 and 36 stand rejected as being unpatentable over the Maeda reference in view of either Blake or Jaffe, further in view of Sokol and further in view of U. S. Patent No. 6,136,880 to Snowwhite *et al.* Claim 47 stands rejected as being unpatentable over the Maeda reference in view of either Blake or Jaffe and further in view of U.S. Patent No. 4,716,270 to Gnanamuthu *et al.* Applicant respectfully traverses these rejections.

With respect to the obviousness rejections applied to claims dependent upon Claim 1, Applicant respectfully submits that all such rejections are traversed in light of the above discussion of the Maeda reference. In all cases, the Examiner is relying upon the Maeda

reference as teaching the limitations of independent Claim 1. As noted above, the Maeda reference clearly fails to teach or suggest the use of a radiation curable and substantially solvent free maskant formulation and also fails to teach or suggest curing a radiation curable coating after application of the coating onto the substrate. In light of this clear deficiency, Applicant submits that any obviousness rejection relying on the Maeda reference should also be reconsidered and withdrawn. A similar argument can be made with regard to independent Claim 48, which also recites the use of a radiation curable and substantially solvent-free composition and applying the curable maskant composition to a substrate prior to curing. It appears that the Examiner is relying on the Maeda reference for this teaching. As a result, Applicant respectfully submits that any rejection of Claim 48 and any claim dependent thereon that relies on Maeda in this manner should also be reconsidered and withdrawn.

Further, Applicant notes that independent Claim 19 and all claims dependent thereon recite the use of a radiation curable and substantially solvent-free line sealant composition. The Examiner admits that the Maeda reference does not teach the use of a line sealant composition of any kind, but relies upon the Blake or the Jaffe references as teaching either coating a maskant layer with a plastic film or resealing scribed lines. However, the Office Action is entirely silent as to which reference, if any, can be relied upon as teaching the use of a radiation curable and substantially solvent-free line sealant composition as recited in Claim 19 and all claims dependent thereon. As noted above, the Maeda reference clearly fails to teach or suggest a radiation curable and substantially solvent-free composition of any kind for any use. There is also nothing in the teachings of the Blake or Jaffe references to suggest such a composition. In light of the foregoing, Applicant respectfully requests reconsideration and withdrawal of all obviousness rejections of Claim 19 and any claim dependent thereon.

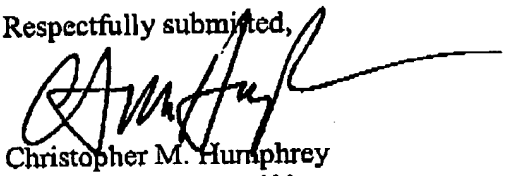
Finally, Applicant respectfully submits that the Maeda and Sokol references are not properly combinable in the manner contemplated in the Office Action. As previously noted, the Maeda reference is directed to a water-based latex maskant composition formed by adding a polymer latex solid to water along with other optional ingredients. There is nothing in the Maeda reference to suggest the use of a radiation curable polymer or to suggest curing a maskant composition after application of the composition to a substrate. The Sokol reference is directed

exclusively to UV-curable polymerizable coating compositions that are substantially solvent-free and designed for use as "finishing" coatings for household items. As noted in the Sokol reference, the compositions described therein are applied to a substrate prior to curing (column 3, lines 7-25). Thus, the Sokol reference describes compositions and coating methods that are completely dissimilar from the maskant compositions and coating methods described in Maeda. There is no also no suggestion in the Sokol reference that the compositions described therein would be suitable for use as a maskant composition resistant to an etching bath as required in the Maeda reference. In light of the foregoing, Applicant respectfully submits that there is no reasonable motivation to combine the Sokol and Maeda references as contemplated in the Office Action and requests reconsideration and withdrawal of all rejections that rely on such a combination for this additional reason.

Accordingly, it is respectfully submitted that Applicant has made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all pending claims are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned should the Examiner have any comments or suggestions in order to expedite examination of this case.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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Ciba Specialty Chemicals

Additives
Imaging and Coating Additives

Ciba

Ciba® IRGACURE® 1700 Photoinitiator

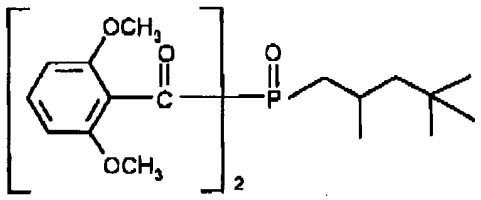
General

IRGACURE 1700 is a versatile liquid photoinitiator for radical polymerisation of unsaturated resins after UV light exposure.

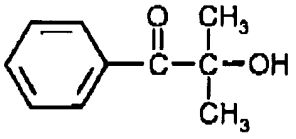
It is especially suited for white pigmented formulations, curing of thick sections and for resins for glass fibre reinforced materials.

Chemical Composition

IRGACURE 1700 is a mixture of :

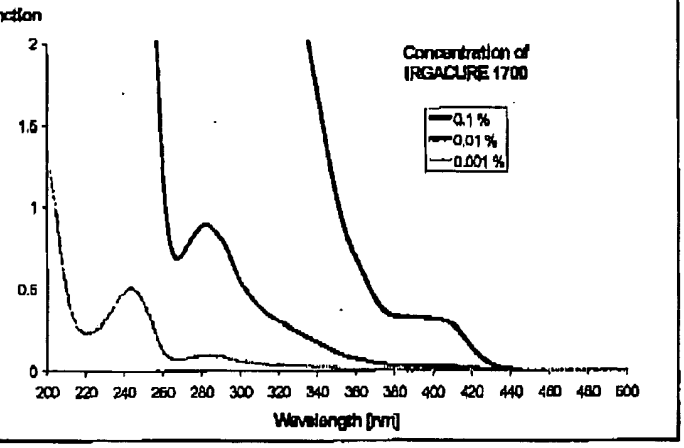


25 % Bis(2,6-dimethoxybenzoyl)-2,4,4-trimethyl pentylphosphineoxide



75 % 2-Hydroxy-2-methyl-1-phenyl-propan-1-one (DAROCUR® 1173)

Absorption Spectrum
(% in Acetonitrile)



Ciba® IRGACURE® 1700
Photoinitiator

Ciba

Physical Properties
(typical values)

Appearance: light yellow liquid

Specific density (20° C): 1.1 g/cm^3

Miscibility: miscible with most organic solvents

Applications

IRGACURE 1700 may be used, after adequate testing, in UV curable formulations for clear and for pigmented coatings on wood, metal, plastic, paper and optical fibers as well as for printing inks and prepregs. For patent reasons, however, the use of this product is not allowed in dental applications.

Suitable UV curable formulations may be based on acrylate resins, UPES/styrene or UPES/acrylate monomer systems. As a liquid photoinitiator, IRGACURE 1700 is especially easy to incorporate into formulations.

IRGACURE 1700 exhibits outstanding curing performance in highly opaque white furniture coatings or screen inks containing rutile titanium dioxide and affords minimum yellowing after exposure to sufficient amounts of UV radiation. Additionally the outstanding absorption properties of IRGACURE 1700 allow curing of thick sections.

Due to its enhanced photosensitivity at longer wavelengths, IRGACURE 1700 can easily be used in combinations with UV absorbers, e.g. TINUVIN® 400. It is therefore ideally suited for use in weather-resistant UV curable coatings.

The amount of IRGACURE 1700 required for optimum performance should be determined in trials covering a concentration range.

Recommended concentrations

Clear acrylate & UPES/styrene coatings :	**1.0 - 2.0 % IRGACURE 1700**
White acrylate furniture coatings :	**1.5 - 2.5 % IRGACURE 1700**
White UPES/styrene furniture coatings :	**2.0 - 3.0 % IRGACURE 1700**
White screen printing inks :	**2.0 - 4.0 % IRGACURE 1700**
Glass reinforced UPES/styrene prepregs :	**0.2 - 1.0 % IRGACURE 1700**

Safety and Handling

IRGACURE 1700 should be handled in accordance with good industrial practice. Detailed information is provided in the Safety Data Sheet.

IRGACURE 1700 is sensitive to visible light and any exposure to sunlight should be avoided. Opened drums should be closed after use to protect the product against light.

Trademark

IRGACURE is a registered trademark.

Ciba® IRGACURE® 1700
Ph t initiat r

Ciba

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